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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
08/852,158	05/06/1997	SHARAD MATHUR	MSI-151US	6705

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EXAMINER

LAO, SUE X

ART UNIT	PAPER NUMBER
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2126

DATE MAILED: 04/03/2003

25

Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary

Application No.

08/852,158

Applicant(s)

MATHUR ET AL.

Examiner

S. Lao

Art Unit

2126

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 November 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-40 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20, 23-30 and 32-40 is/are rejected.
- 7) ☒ Claim(s) 21, 22 and 31 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Claims 1-40 are pending. This action is in response to the appeal brief filed 11/1/2002.

2. Upon further consideration of applicant's arguments filed 11/1/2002, the finality of the rejection of the last Office action is withdrawn.

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 20, 21, 31 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 20 and 21 each recites "the requesting" on line 2, which is confusing because there are two recitations of requesting in claim 17, on lines 4 and 7, respectively. For the purpose of art rejection, it is interpreted as "requesting at least one of the application programs to close itself", as best understood and as it appears to be.

Claim 31 recites "before prompting the user" on line 11, which is confusing because there are two recitations of prompting in claim 31, on lines 5 and 8, respectively. For the purpose of art rejection, it is interpreted as "before prompting the user to select at least one of the application programs and then requesting the one selected application program to close itself", as best understood and as it appears to be.

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1, 2, 9, 32, 33, 36, 37 are rejected under 35 U.S.C. 102(b) as being anticipated by Inside Macintosh (QuickDraw GX Environment and Utilities, chapters 2 and 3) (hereafter IM).

As to claim 1, IM teaches a method of controlling memory usage in a computer system having limited physical memory, wherein one or more application programs (application) execute in conjunction with an operating system (mac OS including QuickDraw GX functionality), the method comprising:

setting a plurality of memory thresholds (thresholds for warning / `graphics_client_memory_too_small`, non-fatal errors / `could_not_dispose_backing_store`, fatal errors / `out_of_memory`); and

the operating system wielding, at increasingly critical memory thresholds (from warning to non-fatal errors to fatal errors), correspondingly increasing control over said one or more application programs to reduce memory usage (from continue execution to continue execution internally to terminate execution immediately). See pages 3-3; 3-7; 3-11; 3-41; 3-42; 3-45.

As to claim 2, IM teaches at a less critical memory threshold (non-fatal internal errors), communicating a quest (post warning) to at least one of the application programs for the at least one application program to limit its use of memory (6 steps); and at a more critical memory threshold (truly fatal error), terminating at least one of the application programs without allowing its further execution (terminate execution immediately). See page 3-41; 2-11; 2-12.

As to claim 9, storing the instructions on a computer-readable storage medium would have been obvious.

As to claim 32, IM teaches a method of controlling memory usage (memory management) in a computer system having limited physical memory, wherein one or more application programs (applications) execute in conjunction with an operating system (Mac OS including QuickDraw GX functionality), the method comprising:

monitoring memory usage (detect); and

when memory usage is high (memory problem), sending a message (warnings, notices, errors) from the operating system to at least one of the application programs requesting the application program to reduce its current use of memory (invoke application's handlers to process warnings, notices, errors). Page 3-3.

As to claim 33, IM teaches sending the message to the application program when memory usage reaches a defined threshold (warning / graphics_client_memory_too_small, non-fatal errors / could_not_dispose_backing_store, fatal errors / out_of_memory).

As to claim 36, storing instructions for performing the method recited on a computer-readable storage medium would have been obvious.

As to claim 37, note discussion of claim 33.

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 3-6, 8, 10-13, 15, 35, 39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Inside Macintosh (QuickDraw GX Environment and Utilities, chapters 2 and 3).

As to claims 3, 4, IM shuts down an application when the application poses severe enough memory problem. Page 3-41. It is well known that shutting down an application can be a graceful shut down or a forced shut down, wherein the former properly saves the states/data before exiting, and the latter may result in data loss. Requesting the at least one selected application program close itself is taught by a graceful shut down, and terminating the application without allowing its further execution is taught by a forced shut down. As to prompting a user to select an application, it is met by IM (let the user know) page 3-41.

As to claims 5, 6, IM teaches at a first memory threshold, requesting at least one of the application programs to limit its use of memory (warning), at a second memory threshold, requesting at least one of the application programs to close itself (GXExitGraphics ()), at a third memory threshold, terminating at least one of the application programs without allowing its further execution (terminate execution immediately). See pages 3-3; 3-7; 3-11; 3-41; 3-42; 3-45; 2-10, 2-21. As to prompting a user to select an application program, it is met by IM (let the user know, page 3-41; you/user frees memory before GX does it, page 2-12).

As to claim 8, IM teaches discarding read-only memory (unload objects in pictures, page 2-11).

As to claim 10, it is covered by claims 1, 3 and 4. Note claims 1, 3 and 4 for discussion.

As to claims 11, 12, note claims 5 and 6 for discussion of prompting a user before requesting. IM further teaches requiring a user's action before system action (you/user frees memory before GX does it, page 2-12) and thus it would have been obvious to require a user to select/direct before closing/terminating.

As to claim 13, it is covered by claim 5. Note claim 5 for discussion.

As to claim 15, note discussion of claims 3, 4 and 8.

As to claims 35, 39, reclaiming memory from a least recently used application is a well known algorithm (LRS). It would have been obvious to use LRS algorithm in IM.

9. Claims 7, 14, 16-19, 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Inside Macintosh as applied to claims 1, 10 in view of Draves et al (U. S. Pat. 5,950,221).

As to claim 7, Dave teaches memory management, including at a memory threshold, reclaiming unused stack memory (deallocate unused stack memory). Col. 7, lines 48-59. Therefore, it would have been obvious to reclaim unused stack memory in IM. In so doing, memory use would have been more efficient by removing the constraints of initial memory allocation based on worse-case conditions. (Draves, col. 3, lines 25-33).

As to claim 14, note discussion of claims 3, 4 and 7.

As to claim 16, note discussion of claims 14 and 15.

As to claim 17, it is covered by claims 5 and 16. Note claims 5 and 16 for discussion.

As to claims 18 and 19, the relation to the second and third, and the relation to the first, second and third are covered by claim 17 as before the second and the third.

As to claim 22, storing the instructions on a computer-readable storage medium would have been obvious.

10. Claims 23-28, 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Inside Macintosh as applied to claims 1, 32, 37 in view of Culbert et al (U. S. Pat. 5,696,926).

As to claim 23, IM teaches a computer system comprising: a processor (inherent); an operating system (mac OS including QuickDraw GX functionality) that is executable by the processor and that utilizes the physical memory (inherent); a virtual memory system (heaps) that includes physical memory; one or more application programs (application) that utilize the virtual memory system; wherein the operating system is configured to perform the following acts: monitoring physical memory usage (detect); and at increasingly critical physical memory usage thresholds (for warning / graphics_client_memory_too_small, non-fatal errors / could_not_dispose_backing_store, fatal errors / out_of_memory), wielding increasing control over said one or more application programs to reduce physical memory usage (from continue execution to continue execution internally to terminate execution immediately). See pages 3-3; 3-7; 3-11; 3-41; 3-42; 3-45.

IM does not teach that the system does not include secondary storage.

Culbert teaches that a Mac operating system with QuickDraw graphical functionality is implemented on a computer system wherein a secondary storage is optional. Col. 4, lines 56-67. Given the teaching of Culbert, it would have been obvious not to use a secondary storage with IM. In so doing, the system would have been more portable.

As to claims 24-28, 30, note discussions of claims 2-6, 8, respectively.

11. Claims 34, 38, 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Inside Macintosh as applied to claims 32, 37 in view of Berstis et al (U. S. Pat. 5,909,215).

As to claims 34, 38, Berstis teaches error handling, wherein application programs have respective message loops, error handling includes sending an error message to an application program through its message loop (col. 6, lines 33-54, fig. 4). Therefore, it would have been obvious to send the message to the application program through its message loop in IM. A motivation to combine the teachings of IM and Berstis includes ?

As to claim 40, IM as modified by Berstis teaches an application program (IM, application) that resides in a computer-readable memory for execution by a processor in conjunction with an operating system (IM, Mac operating system with QuickDraw graphical functionality), the application program having a message loop (Berstis, fig. 4) that receives messages (messages, including error messages) from an operating system (Berstis, col. 6, lines 33-54).

IM further teaches the application program is responsive to a particular message (GXExitGraphics(void)) received to reduce its current use of memory (exit disposes all the application's graphical clients and their heaps) (page 2-10). When the teachings of IM and Berstis are combined, such message would have been received through the application's message loop.

12. Claim 29 is rejected under 35 U.S.C. 103(a) as being unpatentable over Inside Macintosh in view of Culbert et al as applied to claim 23 and further in view of Draves.

As to claim 29, note discussion of claim 7.


13. Claims 21, 22, 31 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the respective base claim and any intervening claims.

14. Applicant's arguments filed 11/1/2002 have been considered but are moot in view of the new ground(s) of rejection.

15. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sue Lao whose telephone number is (703) 305-9657. A voice mail service is also available at this number. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 746-7238 for After Final communications, (703) 746-7239 for Official communications and (703) 746-7240 for Non-Official/Draft communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 305-9600.

Sue Lao 
March 21, 2003